



**THE DOW CHEMICAL COMPANY  
LOUISIANA OPERATIONS**

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**SHUTDOWN APPLICATION  
for  
POWER I PLANT'S  
BOILER 3 & 4**

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**Submitted to:  
Office of Environmental Services  
Permits Division  
Louisiana Department of Environmental Quality  
P.O. Box 82135  
Baton Rouge, Louisiana**

**March 31, 2005**

**For Information Contact:  
David Wesson  
Environmental, Health, and Safety Services  
THE DOW CHEMICAL COMPANY  
Louisiana Operations  
P. O. Box 150  
Plaquemine, Louisiana 70765-150**



original to IOA  
copy to Adm/K Jordan

March 30, 2005

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

**MAIN FILE**

The Dow Chemical Company  
P.O. Box 150  
Plaquemine, Louisiana 70765-0150

Dr. Chuck Brown  
Assistant Secretary  
Office of Environmental Services  
Department of Environmental Quality  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313

**BOILER 3 & BOILER 4 SHUTDOWN APPLICATION  
POWER I PLANT, PERMIT 385 (M-3)  
THE DOW CHEMICAL COMPANY, LOUISIANA OPERATIONS**

*AI 1409*

Dear Dr. Brown:

Pursuant to the requirements of Section 33:III.525 of the Louisiana Administrative Code (LAC), the Dow Chemical Company, Louisiana Operations (Dow), is submitting the enclosed shutdown application for those decommissioned sources operated under Louisiana State Air Permit No. 385 (M-3) for the Power I Plant. The Louisiana Division Complex is designated as a Part 70 major source as defined in LAC 33:III.507.A.1.a. The Power I Plant's air permit, 385 (M-3) was granted on August 8, 1993.

Attached is the Application for Approval of Emissions of Air Pollutants (Appendix A). The Power I Plant shutdown Boiler 3 on March 12, 2004 and Boiler 4 on March 19, 2004. This attached application has updated EIQs reflecting the deletion of sources. Also attached for reference are the ERC Bank Applications documents, VOC-23 and NOX-9 for the decrease in emissions from the shutdown of Power I's boilers, Boiler 3 (EIQ 1E) and Boiler 4 (EIQ 1F). This documentation includes the Certificate Applications for each of the Emission Reduction Credits (Appendix B) and background calculations (Appendix C) to show how the Emission Reduction Credits were determined. As defined in LAC 33:III.607.A.4 at time of generation, Boilers 3 and 4 VOC and NOx emission reductions have been reviewed and determined to meet the definition. Dow is acknowledging that state permit 385 (M-3) has expired with the shutdown of Boilers 3 and 4.

Additional information will be submitted at a later date concerning the readjustment of permitting fees in associated with the above equipment shutdown.

If you should have questions concerning this application, please don't hesitate call me at (225) 353-6699.


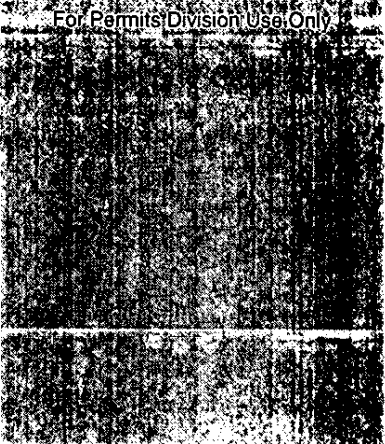
Regards,

Denise Hale  
Environmental, Health, and Safety Services

Attachments

LANT64\Env\_Air\Title V Permits\Power&Utilities\Title V\2005 Shutdown\Boiler 3&4\Boiler 3&4 Cover Letter.doc

REC'D - CES  
005 MAR 30 PM 3:34

Department of Environmental Quality Permits Division P.O. Box 82135 Baton Rouge, LA 70884-2135 (225) 765-0219		<h1 style="margin: 0;">LOUISIANA</h1> <h2 style="margin: 0;">Application for Approval of Emissions of Air Pollutants</h2>			
<b>1</b>  Please Type or Print	Company Name <b>The Dow Chemical Company, Louisiana Operations</b>		<input checked="" type="checkbox"/> Owner  <input checked="" type="checkbox"/> Operator	For Permits Division Use Only 	
	Parent Company (if Company Name given above is a division) <b>The Dow Chemical Company</b>				
	Plant Name (if any) <b>Power I Plant</b>				
	Nearest Town <b>Piaquemine, LA</b>	Parish where located <b>Iberville/West Baton Rouge</b>			
	Agency Interest Number <b>1409</b>	CDS Number <b>1280-00008</b>			

**2 PROPOSED ACTION** Give a brief description of proposed action. Attach flow diagrams, illustrations required to convey an understanding.

This application is to shutdown Boilers 3 & 4 associated with State Permit 385 (M-3) issued August 11, 1993.

**3 PHYSICAL LOCATION, OWNERSHIP AND USE OF ADJOINING PROPERTY.**

☒ Map or description attached.

DISTANCE TO (km) :      Texas      242      Arkansas      300      Mississippi      76      Alabama      322

LATITUDE OF FACILITY FRONT GATE:      30      DG      18      MN      50      SEC

LONGITUDE OF FACILITY FRONT GATE:      91      DG      14      MN      26      SEC

As shown in the attached figures, the Power I Plant is located inside the Louisiana Operations facility of The Dow Chemical Company. The Louisiana Operations facility is located on the west bank of the Mississippi River in the parishes of Iberville and West Baton Rouge on Louisiana Highway 1 (See Figure 1).

**4 TYPE OF APPLICATION**

<input type="checkbox"/> Part 70	<input checked="" type="checkbox"/> State	<input type="checkbox"/> General	<input type="checkbox"/> Renewal (Part 70)
<input type="checkbox"/> Entirely new facility		<input type="checkbox"/> Reconciliation	
<input type="checkbox"/> Previously grandfathered, exempted or unpermitted		<input type="checkbox"/> Modification or expansion of existing facility	

**PROJECT FEE CALCULATION:** Enter fee number, permit type, production capacity/throughput, and fee amount pursuant to LAC 33:III, Chapter 2.

FEE NO.	TYPE	CAPACITY	AMOUNT
<u>N/A</u>	<u>Emission Reduction</u>	<u>Confidential</u>	<u>N/A</u>

**5 KEY DATES**

Estimated date construction will commence: N/A      Estimated date operation will commence: N/A

Note: A completed Emission Inventory Questionnaire (EIQ) that reflects projected emissions from your facility as a whole after the project described in this application becomes operational must be submitted with this application. If you are submitting an application that is for modification or expansion of an existing facility, the Department of Environmental Quality must also have an EIQ for existing emissions. If you have already submitted an EIQ that is on file with the Department, it may fulfill this requirement. Consult instructions for further details.

## 6 EMISSIONS BY POLLUTANT

List each emission from all sources. Group by pollutant PM10, SO2, NOx, CO, VOC Air Toxics, Non-VOC Air Toxics, Other VOC, Non-VOC/Non-TAP, and Total VOC. Grouping by SARA VOC and SARA Non-VOC is optional. Show total tons/year for each pollutant. Consult instructions.

Emission Point ID Number	Pollutant (List individual toxics and non-criteria hydrocarbons separately)	Permitted Emission Rate Before tons/yr	Permitted Emission Rate After tons/yr
	See EIQ sheets		

## 7 HISTORY OF PERMITTED EMISSIONS

List each emission level from facility permits (for unit specific permits, the history should be for the unit of concern only). Group by permit and show totals. Include as last entry, the total emissions following the proposed change, entering the project name for "Permit number" and date of submittal for "Date permit issued". Consult instructions.

Permit Number	Date Permit Issued	Pollutant	Permitted Emission Rate (tons/yr)
385 (M-3)	8/11/1993	CARBON MONOXIDE	1348.6
		NITROGEN OXIDES	9796.0
		PARTICULATE MATTER	77.0
		SULFUR DIOXIDE	258.9
		TOTAL VOC (INCL. LISTED)	25.3

## EMISSION POINT LIST

**Power I Plant**  
**The Dow Chemical Company, Louisiana Operations**  
**Plaquemine, LA**

Emission Point	Description	Operating Rate (Max) or Tank Capacity	Operating Schedule		
			H/D	D/W	W/Y
1E	Boiler #3	1020 MM BTU/hr	24	7	52
1F	Boiler #4	1603 MM BTU/hr	24	7	52

## ANNUAL EMISSION RATES

Emission Point	Permitted emission rates are listed in tons per year					Other**
	PM/PM10	SO2	NOx	CO	VOC	
see EIQ sheets						

# 10 COMPLIANCE WITH FEDERAL REQUIREMENTS

## Statement for Applicable Requirements for Which the Source Is In Compliance

Based on information and belief, formed after reasonable inquiry, The Dow Chemical Company is in compliance with and will continue to comply with all applicable requirements pertaining to the sources covered by the permit application, as outlined in Table 1 through Table 5 in the permit application.

For requirements promulgated as of the date of this certification with compliance dates effective during the permit term, I further certify that The Dow Chemical Company will comply with such requirements on a timely basis and will continue to comply with such requirements.

**CERTIFICATION:** I certify, under provisions in Louisiana and United States Law which provide criminal penalties for false statements, that based on information and belief formed after reasonable inquiry, the statements and information contained in this Application for Approval of Emissions of Air Pollutants, including all attachments thereto and the compliance statement above, are true, accurate, and complete.

**CERTIFICATION:** I certify that the engineering calculations, drawings, and design are true and accurate to the best of my knowledge.

## 11 PERSONNEL

### a. Responsible Official

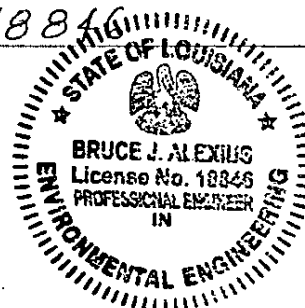
Name <b>Gretchen LeBlanc</b>		
Title <b>Production Leader</b>		
Company <b>The Dow Chemical Company</b>		
Suite, mail drop, or division <b>Louisiana Operations</b>		
Street or P.O. Box <b>P. O. Box 150</b>		
City <b>Plaquemine</b>	State <b>LA</b>	Zip <b>70765</b>
Business Phone <b>(225) 353-1642</b>		

### b. Professional Engineer

Name <b>Bruce Alexius</b>		
Title <b>Expertise Center Manager</b>		
Company <b>The Dow Chemical Company</b>		
Suite, mail drop, or division <b>Louisiana Operations</b>		
Street or P.O. Box <b>P. O. Box 150</b>		
City <b>Plaquemine</b>	State <b>LA</b>	Zip <b>70765</b>
Business Phone <b>(225) 353-8844</b>		

Signature of responsible official(s) (See 40 CFR 70.2) <i>Gretchen C. LeBlanc</i>	
Date <i>3/23/05</i>	
Date	

Signature of Professional Engineer <i>Bruce J. Alexius</i>	
Date <i>3/22/05</i>	
Louisiana Registration No. <i>18846</i>	





**LOUISIANA**  
**Emission Inventory Questionnaire (EIQ)**  
**for Air Pollutants**

<b>1</b>  <b>Please Type or Print</b>	Company Name <input checked="" type="checkbox"/> Owner <b>The Dow Chemical Company, Louisiana Operations</b> <input checked="" type="checkbox"/> Operator	<b>For Permits Division Use Only</b>
	Parent Company (if Company Name given above is a division) <b>The Dow Chemical Company</b>	
	Plant Name (if any) <b>Power I Plant</b>	
	Nearest town Parish where located <b>Plaquemine, LA Iberville/West Baton Rouge</b>	
	Agency Interest Number CDS Number <b>1409 1280-00008</b>	

**2 TYPE OF EIQ** ☒ a. *ONLY* presently existing ☐ b. BOTH proposed additional emissions associated with an emissions application for a permit, variance, or exemption *AND* presently existing emissions expected to be still existing after facility or modification described in application becomes operational.

**3 CONFIDENTIALITY** If you are requesting confidentiality for all information *except air pollution emission rates*, check box ☐  
(You must attach justification for confidentiality request)

**4 ORGANIZATIONAL ACTIVITIES**

Days of week normally NOT operating: ☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☐ Sat ☐ Sun

Days per year facility typically operates: 365

Peak production season (list months): Not seasonal

Daily operating schedule ☒ 24-hours OR specify number of hours

Approximate number of employees at this locaton: 1,700

Details of facilities that, as a whole, operate intermittently:

N/A

**Ownership:**

- ☒ corporation, partnership, or sole proprietorship ☐ regulated utility ☐ municipal government  
☐ state government ☐ federal government ☐ other, specify \_\_\_\_\_

Industrial category -- Indicate Standard Industrial Classification (SIC) Code(s) that apply to facility:

2812

2869

2821

Description of operation with emphasis on air pollution sources. Use attachments if more space is needed.

The Power I Plant is a steam/power cogeneration facility with 4 boilers.

## 5 SUMMARY OF EMISSIONS FOR ENTIRE PLANT AS A WHOLE

Rates given should correspond in most cases to the sum of the individual average rates of the point sources listed on the Single Point Source/ Area Source forms.

Pollutant Type	Emission Rate lbs/hr	Emission Rate tons/yr
a. Particulate (solids or liquids)	0	0
b. Sulfur Dioxides	0	0
c. Nitrogen Oxides	0	0
d. Carbon Monoxide	0	0
e. Volatile Organic Compounds	0	0

# 6 PERSONNEL

a. Manager of Facility on location at plant site

Name <b>Gretchen LeBlanc</b>		
Title <b>Production Leader</b>		
Company <b>The Dow Chemical Company</b>		
Suite, mail drop, or division <b>Louisiana Operations</b>		
Street or P.O. Box <b>P. O. Box 150</b>		
City <b>Plaquemine</b>	State <b>LA</b>	Zip <b>70765</b>
Business Phone <b>(225) 353-1642</b>		

b. Person to contact at site about air pollution control

Name <b>Denise Hale</b>		
Title <b>Senior Environmental Specialist</b>		
Company <b>The Dow Chemical Company</b>		
Suite, mail drop, or division <b>Louisiana Operations</b>		
Street or P.O. Box <b>P. O. Box 150</b>		
City <b>Plaquemine</b>	State <b>LA</b>	Zip <b>70765</b>
Business Phone <b>(225) 353-6699</b>		

c. Headquarters of other off-site contact (see instructions)

Name <b>N/A</b>		
Title <b>N/A</b>		
Company <b>N/A</b>		
Suite, mail drop, or division <b>N/A</b>		
Street or P.O. Box <b>N/A</b>		
City <b>N/A</b>	State <b>N/A</b>	Zip <b>N/A</b>
Business Phone <b>N/A</b>		


d. Person who prepared this report

☐ a ☐ b ☐ c ☒ other (specify below)

Name <b>Kristina Boudreaux</b>		
Title <b>Engineer</b>		
Company <b>Dow Chemical Company</b>		
Suite, mail drop, or division <b>P. O. Box 150</b>		
Street or P.O. Box		
City <b>Plaquemine</b>	State <b>LA</b>	Zip <b>70765</b>
Business Phone <b>(225) 353-5785</b>		

**CERTIFICATION:** I certify, under provisions in Louisiana and United States Law which provide criminal penalties for false statements, that based on information and belief formed after reasonable inquiry, the statements and information contained in this Emission Inventory Questionnaire (EIQ) for Air Pollutants, including all attachments thereto, are true, accurate, and complete.

Signature of responsible official(s) (See 40 CFR 70.2)	
<i>Gretchen C. LeBlanc</i>	
Date	<b>3/23/05</b>
Date	

Department of Environmental Quality Permits Division P.O. Box 82135 Baton Rouge, LA 70884-2135 (225) 765-0219		<h1 style="text-align: center;">LOUISIANA</h1> <h2 style="text-align: center;">SINGLE POINT/AREA/VOLUME SOURCE</h2> <h3 style="text-align: center;">Emission Inventory Questionnaire (EIQ) for Air Pollutants</h3>					
<b>Company Name</b> The Dow Chemical Company, Louisiana Operation		<b>Plant location and name (if any)</b> Power I Plant		<b>Plaquemine, LA</b>		<b>Date of Submittal</b> March 2005	
<b>Source ID Number</b> 1E		<b>Descriptive name of the equipment served by this stack or vent</b> Boiler #3		<b>Approx. location of stack or vent (see inst. on how to determine loc. of area srce).</b> UTM Zone No. 15 Horizontal Coordinate 669900 mE Vertical Coordinate 3355400 mN			
<b>Stack and Discharge Physical Characteristics</b> Change <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Height of stack above grade (ft) 90.0	Diameter (ft) or stack discharge area (ft <sup>2</sup> ) N/A (ft) (ft <sup>2</sup> )	Stack gas exit temperature (Deg F) 250	Stack gas flow at process conditions, not at standard (ft <sup>3</sup> /min) 300800	Stack gas exit velocity (ft/sec) N/A	Date of construction / modification
						Operating rate (Max) or tank capacity	
<b>Fuel</b>		<b>Type of fuel used and heat input</b>		<b>Operating Characteristics</b>		Normal Operating Rate	
		Type of fuel		Percent of annual throughput of pollutants through this emission point		Normal operating time of this point	
		Heat input (MMBTU/hr)		Dec-Feb 25 Mar-May 25 Jun-Aug 25 Sep-Nov 25		days/wk 7 wk/yr 52	
						1020 MM BTU/hr	
<b>Air Pollutant Specific Information</b>							
Pollutant		Control Equipment Code	Control Equipment Efficiency (%)	Emission Rate		Emission Estimation Method	Add, Change, or Delete Code
				Average (lbs/hr)	Maximum (lbs/hr)	Annual (tons/yr)	Concentration in gases exiting at stack
CARBON MONOXIDE		000	0			7	Delete
NITROGEN OXIDES		000	0			7	Delete
PARTICULATE MATTER		000	0			7	Delete
SULFUR DIOXIDE		000	0			7	Delete
TOTAL VOC (INCL. LISTED)		000	0			7	Delete



Department of Environmental Quality  
Office of Air Quality  
Radiation Protection  
P. O. Box 82135  
Baton Rouge, LA 70884-2135  
(225) 765-0195

# LOUISIANA

## ERC BANK APPLICATION VOLATILE ORGANIC COMPOUNDS



COMPANY: The Dow Chemical Company, Louisiana Operations

LOCATION: Plaquemine Iberville  
(City) (Parish)

Westbank of the Mississippi River in Iberville Parish on LA Highway 1  
(Physical Location)

MAILING ADDRESS: P. O. Box 150 Plaquemine LA 70765  
(Street or P. O. Box) (City) (State) (Zip Code)

8.69

(ERCs deposited - TPY)

0

(ERCs relied upon for netting - TPY)

0

(ERCs relied upon for offsets - TPY)

Boiler 3 - 3/12/04

Boiler 4 - 3/19/04

(Date of Emissions Increase/Decrease)

8.69

(ERCs available for netting - TPY)

8.69

(ERCs available for offsets - TPY)

### COMMENTS

ERC No: VOC-23

NOTE: Power I Plant's Boiler 3 and 4.

### AFFECTED PERMIT

Permit Number: 385 (M-3) Facility: Power I Plant

Affected EIQ Source ID No. (s): 1E: Boiler 3 and 1F: Boiler 4

I hereby certify that the information contained in this ERC Bank Application and calculations is true and accurate to the best of my knowledge.

Gretchen Leblanc

(Name)

Production Leader

(Title)

(225)-353-1642

(Telephone Number)

Gretchen C Leblanc

(Signature)

3/23/05

(Date)

Department of Environmental Quality  
Office of Air Quality  
Radiation Protection  
P. O. Box 82135  
Baton Rouge, LA 70884-2135  
(225) 765-0195

# LOUISIANA

## ERC BANK APPLICATION

### Oxides of Nitrogen



**COMPANY:** The Dow Chemical Company, Louisiana Operations

**LOCATION:** Plaquemine Iberville  
(City) (Parish)

Westbank of the Mississippi River in Iberville Parish on LA Highway 1  
(Physical Location)

**MAILING ADDRESS:** P. O. Box 150 Plaquemine LA 70765  
(Street or P. O. Box) (City) (State) (Zip Code)

2336

(ERCs deposited – TPY)

1139.3

(ERCs relied upon for netting – TPY)

854.4<sup>1</sup>

(ERCs relied upon for offsets – TPY)

Boiler 3 – 3/12/04

Boiler 4 – 3/19/04

(Date of Emissions Increase/Decrease)

<sup>1</sup> Allotted to Venture's Lease Co., LLC

342.4

(ERCs available for netting – TPY)

342.4

(ERCs available for offsets – TPY)

### COMMENTS

**ERC No: NO<sub>x</sub>-9**

**NOTE:** Power I Plant's Boiler 3 and 4.

### AFFECTED PERMIT

Permit Number: 385 (M-3) Facility: Power I Plant

Affected EIQ Source ID No. (s): 1E: Boiler 3 and 1F: Boiler 4

I hereby certify that the information contained in this ERC Bank Application and calculations is true and accurate to the best of my knowledge.

Gretchen Leblanc

(Name)

Production Leader

(Title)

(225)-353-1642

(Telephone Number)

Gretchen C. Leblanc

(Signature)

3/23/05

(Date)

## Emissions Summary Boiler 3&amp;4

	<b>1999 Actual Emissions (tpy)</b>	<b>2000 Actual Emissions (tpy)</b>	<b>Average 2-yr Actual Emissions (tpy)</b>
<b>NOx</b>			
Boiler 3 (EIQ 1E)	1233.70	1208.74	
Boiler 4 (EIQ 1F)	1208.02	1021.59	
Total	2441.71	2230.33	<b>2336.02</b>
<b>VOC</b>			
Boiler 3 (EIQ 1E)	3.43	3.55	
Boiler 4 (EIQ 1F)	5.43	4.96	
Total	8.87	8.51	<b>8.69</b>
<b>SO2</b>			
Boiler 3 (EIQ 1E)	3.51	3.63	
Boiler 4 (EIQ 1F)	5.55	5.06	
Total	9.06	8.69	<b>8.87</b>
<b>PM10</b>			
Boiler 3 (EIQ 1E)	12.26	12.68	
Boiler 4 (EIQ 1F)	19.40	17.70	
Total	31.67	30.38	<b>31.02</b>
<b>CO</b>			
Boiler 3 (EIQ 1E)	492.59	509.20	
Boiler 4 (EIQ 1F)	155.21	141.58	
Total	647.79	650.78	<b>649.29</b>
<b>Methane</b>			
Boiler 3 (EIQ 1E)	0.74	0.76	
Boiler 4 (EIQ 1F)	1.16	1.06	
Total	1.90	1.82	<b>1.86</b>



## **BOILER 3**

DESCRIPTION: 1E

SOURCE ID: BOILER # 3

**BASIS AND CALCULATIONS:**

Fire Duty: 5,151,129 MMBTU/yr  
Days in Operation: 365 days  
Excess O<sub>2</sub> in Flue (Wet Basis): 5 Mole %  
Stack Temperature: 250 Deg F  
Stack Diameter: 12 Feet  
Fuel Type: Natural Gas  
Heating Value: 1050 Btu/SCF

**Emission Factors:**

PM10:	5.00 lb/MMSCF	Derived from standard AP-42 calculations
SOx:	1.43 lb/MMSCF	Dow Natural Gas Contract
Non-Methane:	1.4 lb/MMSCF	Derived from standard AP-42 calculations
Methane:	0.3 lb/MMSCF	Derived from standard AP-42 calculations
CO:	200 ppmv(wet)	Based on Operating Experience
NOx:	0.479 lb/MMBTU	Based on 1999 Operating Data

$$\begin{aligned}\text{PM10 Emissions} &= \text{PM10 Emission Factor} / \text{Heating value} * \text{Fire Duty} \\ &= 5.00 \text{ lb/MMSCF} * 1 \text{ SCF}/1050.0 \text{ Btu} * 5.15\text{e}+6 \text{ (MM Btu/yr)} \\ &= 24529.186 \text{ lb/yr} \\ &= 12.26 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{SOx Emissions} &= \text{SOx Emission Factor} / \text{Heating value} * \text{Fire Duty} \\ &= 1.43 \text{ lb/MMSCF} * 1 \text{ SCF}/1050.0 \text{ Btu} * 5.15\text{e}+6 \text{ (MM Btu/yr)} \\ &= 7015.347 \text{ lb/yr} \\ &= 3.51 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{CO Emissions} &= \text{CO Conc} * \text{Flue Gas Flow} \\ &= 200 \text{ (ppm)} * (1/10^6) * 0.3484\text{E}+05 \text{ (lb_mole/hr)} * (28 \text{ lb/lb_mole}) \\ &= 985173.84 \text{ lb/yr} \\ &= 492.59 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{NOx Emissions} &= \text{NOx Emission Factor} * \text{Fire Duty} \\ &= 0.479 \text{ lb/MMSCF} * 5.15\text{e}+6 \text{ (MM Btu/yr)} \\ &= 2467390.791 \text{ lb/yr} \\ &= 1233.70 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{THCLM Emissions} &= \text{THCLM Emission Factor} / \text{Heating value} * \text{Fire Duty} \\ &= 1.400 \text{ lb/MMSCF} * 1 \text{ SCF}/1050 \text{ Btu} * 5.15\text{e}+6 \text{ (MM Btu/yr)} \\ &= 6868.172 \text{ lb/yr} \\ &= 3.43 \text{ tons/yr}\end{aligned}$$

$$\begin{aligned}\text{Methane Emissions} &= \text{Methane Emission Factor} / \text{Heating value} * \text{Fire Duty} \\ &= 0.3000 \text{ lb/MMSCF} * 1 \text{ SCF}/1050.0 \text{ Btu} * 5.15\text{e}+6 \text{ (MM Btu/yr)} \\ &= 1471.751 \text{ lb/yr} \\ &= 0.74 \text{ tons/yr}\end{aligned}$$

DESCRIPTION: 1E

SOURCE ID: BOILER # 3

**BASIS AND CALCULATIONS:**

Fire Duty: 5,324,864 MMBTU/yr  
Days in Operation: 365 days  
Excess O<sub>2</sub> in Flue (Wet Basis): 5 Mole %  
Stack Temperature: 250 Deg F  
Stack Diameter: 12 Feet  
Fuel Type: Natural Gas  
Heating Value: 1050 Btu/SCF

**Emission Factors:**

PM10:	5.00 lb/MMSCF	Derived from standard AP-42 calculations
SOx:	1.43 lb/MMSCF	Dow Natural Gas Contract
Non-Methane:	1.4 lb/MMSCF	Derived from standard AP-42 calculations
Methane:	0.3 lb/MMSCF	Derived from standard AP-42 calculations
CO:	200 ppmv(wet)	Based on Operating Experience
NOx:	0.454 lb/MMBTU	Based on 2000 Operating Data

**PM10 Emissions** = PM10 Emission Factor / Heating value \* Fire Duty  
= 5.00 lb/MMSCF \* 1 SCF/1050.0 Btu \* 5.32e+6 (MM Btu/yr)  
= 25356.495 lb/yr  
= 12.68 tons/yr

**SOx Emissions** = SOx Emission Factor / Heating value \* Fire Duty  
= 1.43 lb/MMSCF \* 1 SCF/1050.0 Btu \* 5.32e+6 (MM Btu/yr)  
= 7251.958 lb/yr  
= 3.63 tons/yr

**CO Emissions** = CO Conc \* Flue Gas Flow  
= 46.94 (ppm) \* (1/10<sup>6</sup>) \* 0.3484E+05(lb\_mole/hr) \* (28 lb/lb\_mole)  
= 1018401.35 lb/yr  
= 509.20 tons/yr

**NOx Emissions** = NOx Emission Factor \* Fire Duty  
= 0.454 lb/MMSCF \* 5.32e+6 (MM Btu/yr)  
= 2417488.256 lb/yr  
= 1208.74 tons/yr

**THCLM Emissions** = THCLM Emission Factor / Heating value \* Fire Duty  
= 1.400 lb/MMSCF \* 1 SCF/1050 Btu \* 5.32e+6 (MM Btu/yr)  
= 7099.819 lb/yr  
= 3.55 tons/yr

**Methane Emissions** = Methane Emission Factor / Heating value \* Fire Duty  
= 0.3000 lb/MMSCF \* 1 SCF/1050.0 Btu \* 5.32e+6 (MM Btu/yr)  
= 1521.390 lb/yr  
= 0.76 tons/yr

## **BOILER 4**

**DESCRIPTION:** 1F  
**SOURCE ID:** BOILER # 4

**BASIS AND CALCULATIONS:**

Fire Duty: 8,388,996 MMBTU/yr  
Days in Operation: 365 days  
Fuel Type: Natural Gas  
Heating Value (Avg): 1081 Btu/SCF  
Heating Value (Min): 1050 Btu/SCF  
  
Stack Flowrate @ 32F: 355772 SCFM (Testing 3/23/88)

**Emission Factors:**

CO:	40 lb/MMSCF	Derived from standard AP-42 calculations
PM10:	5.00 lb/MMSCF	Derived from standard AP-42 calculations
SOx:	1.43 lb/MMSCF	Dow Natural Gas Contract
Non-Methane (VOC):	1.4 lb/MMSCF	Derived from standard AP-42 calculations
Methane:	0.3 lb/MMSCF	Derived from standard AP-42 calculations
NOx :	0.288 lb/MMBTU	Based on 1999 Operating Data

**PM10 Emissions** = PM10 Emission Factor / Heating value \* Fire Duty  
= 5.00 lb/MMSCF \* 1 SCF/1081.0 Btu \* 8.39e+6 (MM Btu/yr)  
= 38802.017 lb/yr  
= 19.40 tons/yr

**SOx Emissions** = SOx Emission Factor / Heating value \* Fire Duty  
= 1.43 lb/MMSCF \* 1 SCF/1081.0 Btu \* 8.39e+6 (MM Btu/yr)  
= 11097.377 lb/yr  
= 5.55 tons/yr

**CO Emissions** = CO Emission Factor / Heating value \* Fire Duty  
= 40.0 lb/MMSCF \* 1 SCF/1081.0 Btu \* 8.39e+6 (MM Btu/yr)  
= 310416.13 lb/yr  
= 155.21 tons/yr

**VOC Emissions** = VOC Emission Factor / Heating value \* Fire Duty  
= 1.4 lb/MMSCF \* 1 SCF/1081 Btu \* 8.39e+6 (MM Btu/yr)  
= 10864.565 lb/yr  
= 5.43 tons/yr

**Methane Emissions** = Methane Emission Factor / Heating value \* Fire Duty  
= 0.30 lb/MMSCF \* 1 SCF/1081.0 Btu \* 8.39e+6 (MM Btu/yr)  
= 2328.121 lb/yr  
= 1.16 tons/yr

**NOx Emissions** = NOx Emission Factor \* Fire Duty  
= 0.288 lb/MMSCF \* 8.39e+6 (MM Btu/yr)  
= 2416030.848 lb/yr  
= 1208.02 tons/yr

DESCRIPTION: 1F

SOURCE ID: BOILER # 4

**BASIS AND CALCULATIONS:**

Fire Duty: 7,652,348 MMBTU/yr  
Days in Operation: 365 days  
Fuel Type: Natural Gas  
Heating Value (Avg): 1081 Btu/SCF  
Heating Value (Min): 1050 Btu/SCF

Stack Flowrate @ 32F: 355772 SCFM (Testing 3/23/88)

**Emission Factors:**

CO:	40 lb/MMSCF	Derived from standard AP-42 calculations
PM10:	5.00 lb/MMSCF	Derived from standard AP-42 calculations
SOx:	1.43 lb/MMSCF	Dow Natural Gas Contract
Non-Methane (VOC):	1.4 lb/MMSCF	Derived from standard AP-42 calculations
Methane:	0.3 lb/MMSCF	Derived from standard AP-42 calculations
NOx :	0.267 lb/MMBTU	Based on 1999 Operating Data

**PM10 Emissions** = PM10 Emission Factor / Heating value \* Fire Duty  
= 5.00 lb/MMSCF \* 1 SCF/1081.0 Btu \* 7.65e+6 (MM Btu/yr)  
= 35394.764 lb/yr  
= 17.70 tons/yr

**SOx Emissions** = SOx Emission Factor / Heating value \* Fire Duty  
= 1.43 lb/MMSCF \* 1 SCF/1081.0 Btu \* 7.65e+6 (MM Btu/yr)  
= 10122.903 lb/yr  
= 5.06 tons/yr

**CO Emissions** = CO Emission Factor / Heating value \* Fire Duty  
= 40.0 lb/MMSCF \* 1 SCF/1081.0 Btu \* 7.65e+6 (MM Btu/yr)  
= 283158.11 lb/yr  
= 141.58 tons/yr

**VOC Emissions** = VOC Emission Factor / Heating value \* Fire Duty  
= 1.4 lb/MMSCF \* 1 SCF/1081 Btu \* 7.65e+6 (MM Btu/yr)  
= 9910.534 lb/yr  
= 4.96 tons/yr

**Methane Emissions** = Methane Emission Factor / Heating value \* Fire Duty  
= 0.30 lb/MMSCF \* 1 SCF/1081.0 Btu \* 7.65e+6 (MM Btu/yr)  
= 2123.686 lb/yr  
= 1.06 tons/yr

**NOx Emissions** = NOx Emission Factor \* Fire Duty  
= 0.267 lb/MMSCF \* 7.65e+6 (MM Btu/yr)  
= 2043176.916 lb/yr  
= 1021.59 tons/yr